



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,273	07/29/2003	Osami Kaneto	566.42987X00	4716

20457 7590 02/04/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-9889

EXAMINER

RODRIGUEZ, PAUL L

ART UNIT	PAPER NUMBER
----------	--------------

2125

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,273

Applicant(s)

KANETO ET AL.

Examiner

Paul L Rodriguez

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/29/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. Claims 1-8 are presented for examination.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: S5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 29. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion

Art Unit: 2125

of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The examiner has provided a number of examples of the drawing deficiencies in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these as examples of deficiencies and should make all the necessary corrections to eliminate the drawing objections.

Specification

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it recites the words "said" and "means". Correction is required. See MPEP § 608.01(b).

6. The disclosure is objected to because of the following informalities:

Page 12 line 24 refers to "steps S1-S5", figure 5 only shows steps S1-S4.

Art Unit: 2125

Page 22 line 11 states "viscosity η ", all other references in the specification use the greek symbol " η ".

Appropriate correction is required.

7. The examiner has provided a number of examples of the specification deficiencies in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these as examples of deficiencies and should make all the necessary corrections to eliminate the specification objections.

Claim Objections

8. Claims 1-4 and 8 are objected to because of the following informalities:

Claim 1-4 and 8 contain the use of parenthesis, it is unclear whether the phrase contained in the parenthesis is part of the claimed subject matter or not, because it is unclear, the claims could be considered indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appropriate correction is required.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-4 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The design support apparatus, while claiming an apparatus is simply a means for performing a number of calculations and analyzing using different analysis methods. These calculations could be performed using, paper, pencil and a slide rule by one of ordinary skill in the art. Also, each of the means as described in the specification is simply

Art Unit: 2125

referring to software that performs these calculations, which is also considered non-statutory.

The steps performed in claims 1-4 are also not technically embodied, while the preamble of the claim refers to an apparatus, which could be a slide rule, the body of the claim simply refers to a means for analyzing and calculating which are not technologically embodied.

11. Claims 5-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 5-7 are simply claiming a computer program, which is considered non-statutory subject matter and is not patentable.

Claim Rejections - 35 USC § 103

12. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (U.S. Pat 6,136,235) in view of Fujita et al (U.S. Pat 5,035,598).

Saito et al teaches a method and apparatus (figure 1) supporting design of a resin mold product, where a computer (reference number 10, 20, 40) is used to support design of a resin mold product made of thermosetting resin (abstract, figure 1, col. 1 lines 9-17), comprising a flow analysis step in which a finite difference method or a finite element method (col. 1 lines 27-32, col. 2 lines 38-46) is used to analyze a flow of thermosetting resin injected into a resin filling cavity to mold said resin mold product (reference number 21) a residual strain calculation step for calculating thermosetting resin's residual strain or stress after heat shrinkage of the thermosetting resin injected into the resin filling cavity to mold said resin mold product (col. 2 lines 11-37), wherein in said flow analysis step, a temperature, a coefficient of elasticity and a strain (or stress) component of the thermosetting resin at a time of heat curing are calculated for each of first three-dimensional solid elements used for flow analysis (col. 3 lines 41-49,

Art Unit: 2125

reference number 20), a program readable by a computer (obvious/inherent to elements 10, 20, 40) and various calculations relating to flow analysis, strain or stress, temperatures, etc. as presented in claims 2-4 would be considered obvious calculations that would be made.

Saito et al fails to teach a strength analysis step in which a finite element method is used to analyze strength of said resin mold product (col. 3 lines 41-49, reference number 20), in said residual strain calculation step, correspondence between each of second three-dimensional solid elements used for strength analysis in said strength analysis step and each of said first three-dimensional solid elements, and the temperature, the coefficient of elasticity and the strain (or stress) component calculated for each of said first three-dimensional solid elements in said flow analysis step are used in order to set a temperature, a coefficient of elasticity and a strain (or stress) component at the time of heat curing for each of the second three-dimensional solid elements and residual strain (or stress) after the heat shrinkage is calculated for each of said second three-dimensional solid elements; and in said strength analysis step, the residual strain (or stress) after the heat shrinkage, which is calculated in said residual strain calculation step, is set to said each of said second three-dimensional solid elements, and the strength of said resin mold product is analyzed.

Fujita et al teaches a method and apparatus (figures 1, 5) supporting design of a resin mold product, where a computer is used to support design of a resin mold product made of thermosetting resin (abstract, figure 1, 5) comprising a flow analysis step used to analyze a flow of thermosetting resin injected into a resin filling cavity to mold said resin mold product (reference number 12, col. 1 lines 51-54, col. 3 lines 54-65), a residual strain calculation step for calculating thermosetting resin's residual strain or stress after heat shrinkage of the thermosetting

Art Unit: 2125

resin injected into the resin filling cavity to mold said resin mold product (col. 4 lines 19-41), and a strength analysis step in which a finite element method is used to analyze strength of said resin mold product (col. 4 lines 42-52), wherein in said flow analysis step, a temperature, a coefficient of elasticity and a strain or stress component of the thermosetting resin at a time of heat curing are calculated for each of first three-dimensional solid elements used for flow analysis (col. 3 line 66 – col. 4 line 41), in said residual strain calculation step, correspondence between each of second three-dimensional solid elements used for strength analysis in said strength analysis step and each of said first three-dimensional solid elements, and the temperature, the coefficient of elasticity and the strain (or stress) component calculated for each of said first three-dimensional solid elements in said flow analysis step are used in order to set a temperature, a coefficient of elasticity and a strain or stress component at the time of heat curing for each of the second three-dimensional solid elements, and residual strain or stress after the heat shrinkage is calculated for each of said second three-dimensional solid elements (col. 4 line 53 – col. 6 line 12) and in said strength analysis step, the residual strain or stress after the heat shrinkage, which is calculated in said residual strain calculation step, is set to said each of said second three-dimensional solid elements, and the strength of said resin mold product is analyzed (col. 4 lines 42-52, col. 6 lines 1-12), a program readable by a computer (figure 5) and various calculations relating to flow analysis, strain or stress, temperatures, etc. as presented in claims 2-4 would again be considered obvious calculations that would be made.

Saito et al and Fujita et al are analogous art because they are both related to design and analysis of a resin mold products.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the strength analysis of Fujita et al in the method and apparatus of Saito et al because Fujita et al teaches a system that is simple to use, that provides an optimum molding condition setting system for the injection molding machine so that even an unskilled engineer can easily set the optimum molding condition as well as the skillful engineer does (col. 1 line 39 – col. 3 line 20).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zheng et al (U.S. Pub 2004/0230411) – teaches numerous aspects of structural analysis of products produced by a resin mold.

Liang et al (U.S. Pub 2001/0051858) – teaches a method of setting parameters for injection molding machines, performing calculations using flow analysis to predict the quality of final products.

Nishiyama et al (U.S. Pat 6,192,327) – teaches various aspects of injection mold analysis and a mold design system.

Nakano (U.S. Pat 6,161,057) – teaches analyzing fluid flows for injection molding to determine if product failure is likely to occur, considered the strength of the product.

Harada et al (U.S. Pat 5,097,432) – teaches finite element analysis for injection molding machines, conducting flow analysis and determines strength of the product.

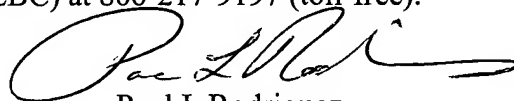
Fujita et al (U.S. Pat 5,031,127) – teaches finite element method to analyze injection molding process.

Art Unit: 2125

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul L Rodriguez whose telephone number is (571) 272-3753. The examiner can normally be reached on 6:00 - 4:30 T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul L Rodriguez
Primary Examiner
Art Unit 2125

PLR
2/2/05